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ABSTRACT

Recent national concern about the levels of adults' literacy skills has resulted in a demand for expanded and more efficient basic skills programs. In turn, governmental agencies at all levels, politicians, and community organizations are seeking continually increasing amounts of information about a variety of topics pertaining to literacy education. A national information base is clearly becoming increasingly necessary. The creation of a knowledge base to guide literacy and basic skills instruction and program implementation has been hampered not only by the limited resources spent by the federal government and by private foundations on these topics, but also by the structure of funding for research. Most studies funded are short-term. Another problem has been the lack of bona fide research studies. There is a critical need for comprehensive research on adult learning (particularly native and second language learning), instructional methods, assessment and accountability systems, and the organization and delivery of services. The creation of a comprehensive research and development base for supporting a coordinated adult basic skills education system will require the establishment of a new institutional structure and an additional federal investment, including the creation of a national center for adult literacy. (MN)

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ADULT LITERACY RESEARCH AND DEVELOPMENT: AN AGENDA FOR ACTION

by

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Background Paper Prepared for

Project on Adult Literacy

of the

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FOREWORD

This paper is one of several prepared by consultants to The Project on Adult Literacy sponsored by the Southport Institute for Policy Analysis. The papers were commissioned to help the Project's staff develop an in-depth understanding of various issues and perspectives bearing on the federal role in promoting adult literacy.

In total, seven papers were commissioned. They were prepared during the fall of 1988. The consultants who prepared them met as a group five times during that period and vigorously debated each other's work as well as other issues concerning adult literacy. At no time during this process did the Project's staff require that the consultants agree with each other or with the conclusions being formulated by the staff. The consultants were given complete freedom to state their own ideas.

As a result, the views expressed in this paper are those of the author alone. They do not necessarily reflect the views of the Southport Institute, the Project on Adult Literacy or any of the other consultants involved with the Project's work.

The Southport Institute is making these working papers available to help increase understanding and stimulate discussion about the problems of adult literacy and as an expression of gratitude for the contribution of the authors to the Project on Adult Literacy.

The working papers prepared for the Project are:

Judith A. Alamprese:	Adult Research and Development: An Agenda for Action
William B. Bliss:	Providing Adult Basic Education Services to Adults with Limited English Proficiency
Jack A. Brizius:	The State Role in Adult Literacy Policy
Paul V. Delker and William J. Yakowicz:	Toward the Vision of a Literate Society
Susan E. Foster:	Professionalization of the Adult Literacy Workforce
Arnold Packer:	Retooling the American Workforce: The Role of Technology in Improving Adult Literacy During the 1990s
William F. Pierce:	A Redefined Federal Role in Adult Literacy: Integrated Policies, Programs, and Procedures

These papers are available from: The Project on Adult Literacy, Suite 415, 440 First Street, N.W., Washington, DC 20001, (202) 783-7058.

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ADULT LITERACY RESEARCH AND DEVELOPMENT: AN AGENDA FOR ACTION

by

Judith A. Alamprese

INTRODUCTION

The adult literacy crisis in America has attracted the attention of the public, politicians, and policymakers. Through the efforts of Project Literacy U.S. (PLUS) and other national initiatives, various dimensions of the literacy problem and its effects on individuals' lives have been portrayed by television, radio, and print media. Literacy programs have expanded, and thousands of adults have come forth to volunteer their services as tutors. 1/ While the number of adults participating in the basic skills and English-as-a-second-language (ESL) programs that are funded under the federal Adult Education Act has increased steadily during the past decade--to approximately 3.1 million adults in 1986--this number represents but a small fraction of the millions of adults who lack the basic skills needed to function successfully in our society, and who could benefit from these services. 2/

The PLUS media campaign and related literacy activities have broadened the public's awareness not only of the personal consequences of illiteracy, but also of the impact that an ill-prepared workforce can have on America's position in the world economy. Recent reports and studies, such as those released by the Hudson Institute 3/ and the Educational Testing Service, 4/ have described the skill levels of our current and future workforce and the increased demands that workers will face as we

move into the 21st century. These analyses suggest that our ability to compete globally will require a workforce proficient in skills such as reading--i.e., literacy--as well as writing, computation, critical thinking, problem solving and reasoning--i.e., basic skills. America's "literacy" crisis, thus, concerns both individuals' desires to improve the quality of their lives, and politicians' and policymakers' interests in ensuring that the country is prepared to meet the challenges of an increasingly complex technological workplace.

One response to the need to upgrade the basic skills of adults has been the federal government's efforts to support literacy services through programs funded by the U.S. Departments of Education, Labor, and Health and Human Services. The bulk of the monies distributed by these departments has been used by institutions and other entities, including school districts, community colleges, libraries, community-based organizations, and private industry councils, to carry out basic skills programs or to contract for services. Minimal resources have been spent on activities such as adult learning research, literacy program development, staff training, dissemination, and evaluation. Because of the limited support for these types of activities, literacy programs have been designed using elementary education models and individuals' intuitive sense, rather than on results from research and development in adult learning and basic skills education. The paucity of support for theory-building and evaluation studies has hampered the formation of a system of adult basic skills education that is derived from empirically-tested principles of good practice.

As a step toward creating an enhanced system in basic skills education, this paper presents an agenda for conducting comprehensive research and development. Applied and basic research activities, as well as developmental projects, are proposed in a number of areas that are critical to the creation of an effective and comprehensive adult basic education system. Also discussed is the role that the federal government can play in improving the theory and practice of adult basic education.

ORIENTATION TO A RESEARCH AND DEVELOPMENT AGENDA

Adult basic skills education is in a state of flux in this country. Recent national concern about the level of adults' literacy skills has resulted in a press for expanded and more efficient basic skills programs. At all levels of government, policymakers and politicians are seeking evidence about the effectiveness of literacy programs that they can use to support funding decisions. Increasingly, governmental agencies and community organizations are establishing partnerships to serve more adequately adults with a multiplicity of needs, including education, job training, and social services. Information is being sought about the characteristics of adults who could benefit from basic skills instruction; the types of programs that can best satisfy these adults' educational requirements; the conditions under which adults can improve their skills and knowledge; and models for carrying out successful public-private partnerships to upgrade and retool the American workforce. This need for comprehensive information about program participants and services, which

can be used to design an effective national system for adult basic education, is discussed below.

Need for a National Database

Some of the most frequently-asked questions about the nation's literacy crisis concern topics such as the number of adults who could benefit from basic skills instruction; the demographic characteristics of adults currently enrolled in literacy programs; the types and results of literacy programs currently in operation; and the fiscal expenditures that are being made to combat the literacy problem. While various attempts have been made to provide information on each of these topics, the accuracy and completeness of the data provided is marginal at best. For example, estimates of adults who are in need of literacy services have ranged from 20 to 40 million, depending upon the criteria used to define literacy and what constitutes a basic skills deficit. Although it may be impossible to describe the magnitude of the problem precisely, better information about adults who could benefit from basic skills instruction is necessary for policy and program development.

Learner and Program Characteristics. Further problems are encountered when attempts are made to count the number of adults enrolled in literacy programs and the types of services that are being provided to these adults. While individual federal programs may require funded agencies to report data concerning participants and services offered, no single source exists that captures information across all programs. Furthermore, state monies that are used in conjunction with federal funds to support basic skills programs--such as with programs funded with

federal adult education monies--are not accounted for in the federal reports. Also absent from any aggregate reporting procedures are local government and private funds that are used to finance basic skills programs. The result is that the data which are compiled about literacy and basic skills programmatic efforts are, for the most part, gross estimates of the national effort.

Program Impact. Not only are the existing national data concerning the numbers and types of basic skills programs inadequate, also problematic is the information that is collected about the impact of these programs. For example, service outcome reports submitted by programs funded with federal adult education monies often are based on instructors' estimates of the effects that the program has had on learners, rather than on information that has been collected systematically using reliable and valid measures. Also missing is accurate information concerning the retention rates of programs. As a result of the limited availability of information, policymakers are hampered in their efforts to guide the design of an effective basic skills system, and individual program directors lack data they can use in making program decisions.

Fiscal Support. Another missing piece of the literacy puzzle concerns the amount of money that is being spent by public and private sources on basic skills programs. Conflicting reports issued recently by the Federal Interagency Committee on Education (FICE) and the U.S. House of Representatives Subcommittee on Elementary, Secondary, and Vocational Education concerning the federal government's expenditures on adult literacy program illustrate one aspect of the problem. In an attempt to

describe the nature of the federal involvement in adult literacy education, the FICE document reported that the 1985 total expenditures for federal adult literacy activities were $347.6 million. 5/ In contrast, the Subcommittee's report estimated that $126.5 million was spent by the federal government in 1985 on adult literacy. 6/ This difference in estimations highlights the confusion about the level of financial effort that is being used to address the country's basic skills problem--however defined.

Not only do we lack reliable information about the extent of federal efforts to support basic skills education, but we also have no clear sense of the magnitude of state, local, and private funds that are being directed toward the basic skills problem. While individual state agencies may report monies that they spend on basic skills, and updates on corporate investments are provided by organizations such as the Business Council for Effective Literacy, 7/ there is no single resource that contains information about the extent and types of expenditures.

The lack of a reliable national database that describes the target population for basic skills programs and the operations and financing of these programs presents a major barrier to the establishment of a cohesive system for adult basic skills education. Better information about the status of our current literacy efforts is needed by individuals in all levels of government, as well as by those responsible for designing and operating basic education programs.

Need for Research and Program Development

Many of the existing adult literacy and basic skills programs have

been designed based on instructors' and administrators' conventional wisdom, rather than on documented knowledge about effective practice. In some cases, programs have adopted proven curricular and assessment models; more often, staff have used their experience and limited resources to design services to address learners' goals. One factor that has affected the development of literacy programs has been the dearth of research about the learning styles of undereducated adults, successful instructional strategies, and appropriate assessment instruments. While federal, state, and private funds have supported some research and implementation projects in these areas, the effort has not been adequate to meet the pressing need.

Federal Investment. Historically, federal efforts in research and development in adult basic skills education have not been well supported or disseminated. One example is the research funded with federal Section 309 monies authorized under the Adult Education Act. During the period 1966-1974, a variety of basic skills research and development projects was undertaken by universities and, to a lesser extent, by local education agencies. While the results of a few of the projects have received national attention--such as the Adult Performance Level (APL) study and Mezirow's work concerning adults' motivations for participating in basic skills programs--by and large, most of the Section 309 projects have had limited impact on the quality of basic skills program operations. In some cases, the quality of the projects was questionable; in other instances, the projects' results had limited potential for transferability. 8/

Since federal funding under Section 309 ended in 1974, no consistent

support for basic skills research and development existed until this year, when federal monies for research were appropriated under Section 384 of the Adult Education Amendments of 1988. New studies are being funded to investigate issues such as the use of technology in basic skills instruction, and demonstration programs are being supported to model services such as workplace literacy partnerships. While these projects deal with a number of the issues critical to the improvement and expansion of basic skills programs, they represent a minimal investment in addressing a major system need.

Since 1974, many efforts in basic skills research and development have centered on activities supported by states under Section 310 (now Section 353) of the Adult Education Act. Each State Education Department has authority to set priorities for the expenditures of Section 310/353 monies, and past projects have included the development of curricula and assessment procedures, as well as staff development programs. In some instances, the Section 310 projects have been multi-year efforts resulting in comprehensive curricula and assessment programs. In most cases, however, the monies have been expended for short-term projects intended to address a specific need within a state, such as the provision of a series of staff training workshops or the creation of specialized materials. 9/ Few efforts have been made by states to coordinate the priorities for their Section 310 projects or to fund joint projects, so that products can be created that transcend the needs of an individual state.

One notable outcome from the federal effort has been the receipt of funding by a small number of Section 310 programs from the U.S. Department

of Education's National Diffusion Network (NDN). Under NDN funding as Developer/Demonstrator projects, curricula such as the APL program 10/ and Project CLASS, 11/ assessment systems such as the New York State External High School Diploma Program 12/ and the CASAS Project, 13/ and volunteer programs such as Project F.I.S.T. 14/ and the Jefferson County Adult Reading Program, 15/ have been disseminated to literacy and basic skills programs across the country. While these projects have been successful in providing basic skills programs in many states with effective strategies for upgrading the quality of instruction and assessment, their impact has been modest relative to what must be done to address the overall need for program improvement.

Although most of the funds dispersed by the U.S. Department of Education for adult basic skills research and development has come from the Division of Adult Education, other sections of the Department, such as the Office of Educational Research and Improvement (OERI), have supported some limited efforts. For example, OERI's investments in adult literacy have included the National Adult Literacy Project (NALP)--undertaken during the early 1980s--and the National Assessment of Educational Progress (NAEP)--conducted in 1986. NALP sponsored the production of policy papers that discussed various aspects of the literacy issue and steps that could be taken to combat illiteracy. The project also generated a description of the key characteristics of effective adult literacy programs. 16/ Though no new literacy research was produced as a result of NALP, the project engendered discussion among researchers about the country's basic skills problem and helped to focus their attention on

possible actions for improving literacy practice.

The NAEP results have enlightened researchers' and policymakers' thinking about the adult basic skills problem in this country. By identifying the range of skills that are required of adults to function successfully in our society, the NAEP study has helped to modify the definition of literacy to include not only reading but a more complex array of basic skills, such as information processing and reasoning. 17/ The Educational Testing Service's current work in developing a basic skills curriculum based on the NAEP results promises to be a major contribution to existing basic skills instructional materials.

In addition to the NALP and NAEP projects, OERI has funded a few modest literacy studies that have investigated topics such as the efficacy of intergenerational literacy programs. 18/

Other Fiscal Support. While federal agencies other than the U.S. Department of Education are funding basic skills activities in varying degrees, most of these monies have been used to support direct service, rather than research and program development. Similarly, foundation funding for basic skills research has been limited. Although foundation investments in adult literacy and basic skills have increased gradually since 1970, the monies have been used primarily to enhance community-based literacy program operations, staff training, and literacy program networking. (The grants programs instituted by the Gannett Foundation, B. Dalton Bookseller, and the MacArthur Foundation exemplify these efforts.) Only minimal foundation funding--i.e., less than two percent of the total effort--has been spent on basic skills research and development. 19/

Barriers to an Improved System. The creation of a knowledge base to guide literacy and basic skills instruction and program implementation has been hampered not only by the limited resources spent by the federal government and foundations on these topics, but also by the structure of funding for research. Most of the efforts have been short-term--i.e., one-year studies. These are not long enough to permit adequate collection of empirical evidence to test research hypotheses or to undertake developmental projects that include field test and revision phases. Some exceptional efforts in program development are the multi-year investments in Section 310 projects made by Texas in the APL curriculum and diploma program; by New York in the External High School Diploma Program; and by California in the Comprehensive Adult Student Assessment System.

Another deterrent to the establishment of a knowledge base in adult basic skills education has been the lack of bona fide research studies. Recent reviews of literacy research undertaken by Fingeret 20/ and by Darkenwald 21/ indicate that many of the published works on literacy and basic skills are program descriptions and "how to do it" articles, rather than reports of systematic research with empirically-derived conclusions. While basic research studies in adult literacy are rarely undertaken, the number of credible applied research studies also has tended to be small.

Our ability to create a comprehensive national system for delivering adult basic skills instruction will depend, in part, upon the availability of new information about effective strategies for instruction, assessment, evaluation, and program management. To meet this need, research and development initiatives should be undertaken in these critical areas of

adult basic skills education.

Need for Program Management Models

Adult education program administrators across the country increasingly are faced with the challenge of operating quality programs with limited technical and human resources. As demands for basic skills and ESL instruction expand, administrators grapple with the task of providing services with sub-optimal staffing structures, minimal evaluative data, and limited access to information about promising practices and program models. Also critical is the role that administrators and instructors play in encouraging adult learners to accomplish their immediate goals, as well as to pursue further education and training.

Program Staffing. Historically, adult basic skills programs have been staffed by part-time, former elementary and secondary education teachers who have had minimal training in adult basic education teaching strategies. 22/ Several factors have accounted for the programs' staffing patterns and the training offered to instructors, including the limited size of operating budgets and teaching schedules that do not reflect a continuous eight-hour work day. In some instances, the part-time structure of basic skills programs has precluded the hiring of full-time staff. In most cases, the lack of available funds or human resources has limited the amount of training that is provided to staff. When training is conducted, it usually consists or an occasional workshop or attendance at a conference, rather than regularly-scheduled staff development activities held throughout a program's year. One consequence of the

structure and training patterns is that basic skills programs typically experience high staff turnover. Furthermore, staff who do remain often are frustrated by the lack of training, which if available could increase their ability to work with program participants.

Volunteer programs also are faced with similar challenges. The increase in the number of tutors during the past few years has strained many volunteer programs' capacities to provide adequate staff training and follow-up services. Furthermore, as the types of learners entering both volunteer and classroom-based programs become more diverse--e.g., and include learning disabled adults--tutors and instructors must find appropriate methodologies to serve new types of learners.

In order to improve the overall quality of basic skill program operations, several aspects of program staffing and training require further investigation. Better information is needed about the relationship between the structure of a program--i.e., type of class schedule--and the ability of a program to hire and retain staff. Further, the relative merits of using full- or part-time staff warrant study. Finally, staff training models need to be developed, evaluated, and disseminated.

Program Evaluation. Many program administrators are interested in determining the effects of their programs on students' academic and personal growth. For most classroom-based and volunteer programs, however, program evaluation is a luxury rather than a necessity. A few states, such as Connecticut, Maryland, and California, have commissioned studies to assess the effects of the implementation of a statewide mandate

for competency-based education on program and learner outcomes. 23/, 24/ As well, Laubach Literacy Action has conducted an assessment of the state-of-practice in volunteer program evaluation, in an attempt to discern the accomplishments that have been made by volunteer programs and the steps that should be taken to enhance their evaluation capacities. 25/ Most programs, including both classroom-based and volunteer efforts--collect minimal data on learners' performance and often are not able to analyze these data fully. Often program staff are not trained to administer evaluation instruments, or they feel that existing tools do not capture the types of outcomes that learners are achieving. 26/ The result is that limited information is being collected about the structure of programs and the relationship between teachers' instructional techniques and learners' outcomes. An analysis of these relationships should be made to guide the program improvement process.

Dissemination and Model Building. One factor that has deterred the enhancement of classroom-based and volunteer programs has been the lack of information about effective program models. While the National Diffusion Network has facilitated the dissemination of a small number of literacy and basic skills programs, the need far exceeds available resources. Not only is access to new programs difficult, also absent is any formal mechanism for quality control that defines effectiveness and that assists in program selection. Although efforts have been made to identify the key components of effective literacy and basic skills programs, such as the materials produced by the National Adult Literacy Project 27/ and by B. Dalton Bookseller, 28/ these guides were one-time efforts that discuss

generic characteristics about program components. This information has been useful for programs that conduct evaluations and have data about the effectiveness of each component. However, given the infrequency with which literacy and basic skills programs undertake evaluations, a process is needed both to assess program impact and to transfer information about programs that have evidence of being successful.

Any process for identifying effective program models should include the various types of public and private partnerships in basic skills education that are emerging. One important effort is business and industry's push to upgrade and retool its workforce. Collaborative partnerships between education agencies and corporations and small businesses are being established in order to facilitate the delivery of basic skills programs. In an attempt to provide effective workplace literacy programs, services are being designed that focus on contextual learning and that experiment with new teaching technologies. These efforts, which are being encouraged by the U. S. Departments of Labor and Education, 29/ as well as by business and labor, appear to have great potential for success. However, the transfer and utilization of partnership models will depend, in part, on the efforts that are made to identify and document the critical processes involved in their implementation.

Basic skills programs that serve voluntary participants--such as programs funded under the provisions of the Adult Education Act--are not alone in their desire for systematic information about effective program models. Also in need of data and documentation are programs with mandated

participation--such as those funded under the Food Stamp Program and the Family Support Act. These programs serve significant numbers of adults who could benefit from basic skills instruction, and are increasingly important as models that should be evaluated and disseminated.

Another category of programs that holds promise for addressing our literacy problem are those concerned with alleviating the intergenerational transmission of illiteracy. While previous efforts in early childhood education have provided evidence about the importance of parents in raising the educational achievement of preschool children, 30/, 31/ intergenerational literacy programs attempt to raise the educational achievement of the parent--as well as to contribute to the intellectual growth of the child. As with the other service delivery systems, further assessment and documentation of these efforts is required.

Program Articulation. If we are to have a competitive workforce by the beginning of the 21st century, serious efforts must be made to increase basic skills program retention rates, and to encourage learners' continued participation in education or training. Current estimates are that as many as half of all adult learners who enroll in basic skills programs leave a program within a few weeks of entering. 32/ Since learners' reasons for leaving programs vary--from transportation and childcare problems to dissatisfaction with content and teaching style--no one approach that can be taken to increase their retention. Rather, multiple processes must be developed for identifying potential barriers to adult learners' participation and for working with learners to deal with these barriers as they arise.

While adult basic skills programs need to improve their strategies for retaining learners, they also must work to ensure that learners have opportunities to pursue additional education or training after attaining their immediate goals. Too often adult learners enroll in a basic skills program for a period of time--such as a semester--and then discontinue their study after they have met their short-term needs. In some instances, learners are not aware of the education and training opportunities that are available, since most programs lack the capacity to provide counseling assistance to learners. In others, learners may feel that they are not ready to continue their study and pursue, for example, a high school diploma. In all cases, program staff should be guiding learners throughout their study to help them make informed decisions about their options for further education. The capacity of basic skills programs to carry out this articulation function depends, in part, upon the availability of staff who can identify the education and training resources in a community and who can transfer this information to program participants. To facilitate this process, a learner management model should be created to train basic skills program staff to identify learners' education or job training opportunities and to place them in follow-on programs.

Priorities for Research and Development

If we are to have a basic skills education system in which quality programming is provided by trained staff, several steps need to be taken to develop an underlying base of knowledge and expertise that can move the current state of operations forward. Four areas of investigation are

critical to the creation of this technical base: 1) research on learning, 2) research on instruction, 3) development of assessment and accountability systems, and 4) research on the organization and delivery of services.

These areas concern the implementation of a basic skills enhancement system, as well as the establishment of program policy. While the teaching and learning functions are fundamental to any educational system, they are especially important areas for research because of our limited understanding about how undereducated adults acquire literacy and higher order thinking skills. Also central to the operation of an effective system is an ongoing process for monitoring a program's inputs and outputs--e.g., the target population of potential learners and the results achieved by learners who participate in basic skills programs. Finally, better information is needed regarding effective ways of structuring services--e.g., the time framework for instruction, and delivering services--e.g., contexts in which learning is successful.

The next section of this paper presents a number of research and development activities that are essential to the advancement of a knowledge base in each of the four areas. While some areas cover issues that are appropriate for basic research, most are subjects for applied studies that can help to bride the gap between theory and practice. Also discussed are activities for building the internal framework of a basic skills system, such as model development, staff training, and dissemination.

RESEARCH ON LEARNING

One of the most critical and least understood processes in the education of adults is how they acquire literacy and higher order thinking skills. While many basic skills instructors have relied on methods used in elementary and secondary education for teaching adults, increasingly these approaches have proved to be less than optimal. In order to serve adults enrolled in basic skills programs more effectively, better information is needed about appropriate strategies for facilitating adult learning.

In particular, four topics in the area of adult learning warrant immediate attention by researchers. These are: 1) development of critical thinking skills, 2) learning in context, 3) development of beginning reading skills, and 4) acquisition of English as a second language. Proposed research studies and developmental activities for each of these topics are discussed below.

Development of Critical Thinking Skills. As the complexity of the American workplace increases, it becomes imperative to have a qualified workforce capable of carrying out the changing requirements of jobs. For example, a recent survey of manufacturing plants in the rural South found that as a result of automated technology, the skill demands on production workers are broadening rather than being reduced. 33/ Other research has indicated that the workplace requires not only that workers have the ability to read, write, and compute, but that they also must have the capacity to use these basic skills to communicate with other employees and to solve problems on the job. 34/ Changing expectations about the

requirements of our workforce also have stimulated states to identify the categories of skills that will be demanded of workers. In Michigan, a taskforce of business, labor, education, and community representatives was convened to specify the abilities and behaviors that are necessary across a broad range of business, service, and industrial job sectors. Through the taskforce, academic, personal management, and teamwork skills--including computation, reasoning, and information processing--were identified as the skills that workers will need to possess to be considered "employable." 35/

Given our limited understanding about the processes adults with skill deficiencies use to acquire reasoning and other higher order thinking skills--and the potential impact that lack of this knowledge has on our future economic viability--further investigation in required in this area. For example, one approach that has been used to understand the mechanisms of reasoning skills is to compare and contrast the performance of more and less skilled individuals. Studies that have used this methodology, such as those undertaken by Chi et al., 36/ Clement, 37/ and Lesgold, 38/ have been concerned both with how a reasoning skill operates in young adults and with the difficulties and limitations of students who have not acquired this skill. These studies have shown that problem solving proceeds on the basis of the solver's representation of the problem. Students with less ability tend to represent problems through recognition of literal surface features, and not by inferences from abstracted principles in the domain of knowledge pertinent to a problem. However, "experts" categorize problems according to principles, such as a

conservation-of-energy problem--rather than according to the specific set of factors and conditions represented by the problem. 39/ These results suggest that in order for basic skills to enhance learners' critical thinking, efforts must be made to develop their abilities to conceptualize abstract principles.

A major challenge is to understand better the process through which critical thinking skills are acquired by adults, and to develop a theory of learning about the acquisition of these skills. Illustrative issues that warrant further study and development are:

- The potential for adults with basic skill deficits to develop critical thinking skills and the conditions under which this development can be facilitated;
- The processes used by adults with basic skill deficits to acquire reasoning and other thinking skills in the context of specific domains of knowledge; and
- The strategies used by adults to develop metacognitive abilities and how adults can be helped to acquire these abilities;

Learning in Context. The question of whether adults learn more effectively when material is taught in a "real world" context is one that is discussed frequently by both practitioners and researchers. Since the early 1970s, basic skills programs across the country have adopted a competency based, life skills approach for delivering services. For many programs, such as those funded under the Adult Education Act and the Comprehensive Employment and Training Act (followed by the Job Training Partnership Act), the implementation of this approach has meant the identification of a list of life skill competencies that serve as program

outcomes, and the use of instructional materials that emphasize the life skills' applications of basic skills.

The application of a competency based, life skills approach has been effective in English-as-a-second-language programs, where participants' goals often involve learning to accomplish a "real world" task. Evidence of the success of these programs includes increased learner retention and learners' progress in mastering life skill competencies. 40/ This approach has been used to development adult student assessment systems--e.g., CASAS, and external diploma programs--e.g., the New York and APL models. The life skills movement also has influenced most of the major publishers of adult basic skills materials--e.g., Scott, Foresman and Steck-Vaughn--who have organized their materials using a competency based, life skills framework.

One issue that has arisen in the implementation of competency based, life skills programs is the extent to which the basic skills learned in these programs are transferable across life skill areas. Often, instruction is focused on the application of a specific life skill, rather than on the integration of life skills and basic skills. For example, an instructor may teach learners how to read a bus schedule--without giving them multiple life skill applications to ensure that they understand the underlying basic skills, such as reading a matrix. In these instances, it is not clear whether a learner has grasped the basic skill, and can apply the skill across different areas of "real world" applications. While teaching basic skills in the context of life tasks may be an effective method for making instruction relevant to learners' needs--thereby

motivating learners' participation in programs and enabling them to acquire critical life skills--further investigation is needed to determine the utility of this approach for increasing learners' abilities to apply a core set of skills across various domains of knowledge.

Studies of functional education programs have focused on the development of literacy skills in different contexts, such as the workplace. Analyses, such as those conducted by Sticht et al., 41/ Mikulecky and Diehl, 42/ and Guthrie, Kirsch, and Love, 43/ have shown that higher levels of general reading ability are associated with higher levels of job-related literacy. Some research has indicated that learners in programs that integrate literacy with job knowledge development are likely to show gains in job-related reading that are two to three times greater than the gains they make in general literacy skills. In addition, learners in these programs make gains in general literacy that are as large as or greater than the gains made by learners in general programs. However, learners in general literacy programs make almost no progress in job-related literacy. 44/

These findings provide initial evidence about the generalizability of skills from one specific domain to another more broadly defined domain. Further information is required to assess the utility of the functional literacy education approach for developing both the specific and general literacy skills and content knowledge that adults need to operate successfully in society.

A related topic of study concerns the contexts in which adults can develop literacy skills. Recent research by Fingeret 45/ and Reder and

Green 46/ has identified the importance of the community context and the roles of social networks in facilitating adults' acquisition of reasoning and problem-solving abilities. Further inquiry is needed to understand how "literacy helpers" can serve as mediators for adults who have low literacy skills.

The development of a systematic knowledge base about the contexts in which adults can improve their literacy and basic skills is critical to the overall enhancement of our basic skills education system. Illustrative issues that should be considered for research and development are:

- Effects of the use of a functional competency approach for developing adults' literacy and basic skills across different content domains;
- Identification of generic skills that are transferable across different contexts and processes for teaching these skills; and
- The role that social networks play in the development of adults' literacy skills.

Development of Beginning Reading Skills. Many of the adult learners enrolled in classroom-based and volunteer literacy classes are at the initial stages of developing their reading skills. While various approaches are utilized by literacy instructors to teach reading, there is a lack of detailed understanding about how beginning readers become literate and acquire greater proficiency.

Studies by researchers such as Sticht 47/ have found that there are differences in information processing between child and adult literacy learners. For example, Park's work on semantic structures 48/ and

Boraks's and Schumaker's examination of reading strategies 49/ indicate that adult literacy students process written information differently than do children, thus suggesting that the same instructional strategies may not be appropriate for adults and children.

Other differences have been found in the speed with which adults learn to read compared to children. The work of Chall 50/ and Bowren and Zintz 51/ suggests that adults in the early stages of acquiring reading skills may learn more rapidly than do children in the same stage, because of adults' higher levels of oral language and knowledge. Another area of difference concerns adults' reading potential, which is defined as the difference between their oral recognition vocabulary and ability to comprehend oral language and their vocabulary recognition and comprehension ability in the written language. Our knowledge about adults' reading potential is still in the formative stage and requires more indepth study.

In order to improve the quality of the efforts that are being undertaken to develop adults' reading skills, existing theories about adults' acquisition and expansion of reading skills need to be validated and new hypotheses tested. Illustrative topics for study are:

- The differences in processes used by adults and children to acquire reading skills, such as vocabulary recognition, comprehension, and information processing; and
- The reading potential that adult new readers can be expected to have and the conditions under which this potential can be developed.

Acquisition of English as a Second Language. The population of adults who desire to learn English as their second language continues to increase at significant rates. While many of the adults enrolled in ESL classes are literate in their native language, others lack literacy skills in any language.

As with the research on adult beginning reading, ESL instructional theories are a source of debate among professionals engaged in practice and research. Increasingly, ESL programs are using a competency based, life skills approach to deliver ESL instruction. 52/ This approach provides a structure for organizing a program that includes the teaching of language skills in the context of life tasks. Some teacher training programs have combined a competency-based approach with the use of specific ESL instructional techniques, such as dialogues, language experience, and drills. 53/

Limited systematic research has been undertaken to determine the efficacy of these instructional approaches for facilitating the development of non-native adults' language skills. Further study also is needed to understand the influence that factors such as adults' motivation, circumstances of immigration, and type of occupation can have on adults' learning processes. Illustrative topics for further research and development are:

- The integration of ESL and literacy instruction for adults illiterate in both English and their native language; and
- The effectiveness of different instructional approaches on adults' development of language skills.

RESEARCH ON INSTRUCTION

Related to our need to have a better understanding about the processes involved in adults' acquisition of skills is the necessity to improve the quality of our knowledge about the delivery of instruction in literacy and basic skills programs. Two aspects of this topic warrant immediate attention. The first concerns the professional workforce who provides education services to adults in basic skills, ESL, and volunteer literacy programs. The second is the effectiveness of the teaching methodology that is used in these various programs. Discussed below are key issues concerning each aspect and topics that should be considered for further study.

Development of a Professional Workforce. Our ability to have an enhanced basic skills education system is related both to the quality of the professional staff who support the system, and to the utility of the structure of the system. Currently, the majority of instructors who provide basic skills services work either part time or as volunteers. Furthermore, most instructors have had only minimal formal training in literacy and basic skills teaching methods. 54/ While a few states, such as California, Maryland, and Connecticut, have initiated statewide training efforts to improve the quality of their basic skills instructors, most provide staff development on a less systematic basis. Thus, our current system neither prepares its workforce to perform at maximum levels of productivity, nor provides ongoing support to sustain performance.

Several steps must be taken to create a structure for the development and ongoing support of a professional workforce in adult basic skills

education. The following research and developmental activities are illustrative of the efforts that must be made to improve the current state of practice:

- The identification of the academic knowledge and methodological skills that should be required of instructors in literacy and basic skills programs;
- The development of teacher-training programs for preparing and upgrading literacy and basic skills instructors;
- An examination of the differential effects of voluntary and mandated certification programs on the creation of an adequate pool of literacy and basic skills professionals; and
- The development of a mechanism for the ongoing support of literacy and basic skills professionals.

Delivery of Instruction. The strategies used to deliver instruction in adult basic skills programs have evolved over the past two decades. They have included the traditional group lecture, individualized instruction, and cooperative learning. In many instances, ESL programs have maintained the group format, but have used an interactive instructor-learner process to develop language skills. In basic skills classes, the shift to individualized instruction has been an attempt to meet the specific needs of learners and, in many cases, has assumed that the adult is an independent learner. The more recent use of cooperative learning methods has combined an individualized format with team-building processes. Though these approaches appear to be effective in developing adults' skills, little systematic research has been conducted to identify

the conditions under these methods can be used with different types of learners to teach different skills.

In addition to the methods described above, the use of computers has been introduced slowly to basic skills education programs. While computer-based learning systems hold promise for basic skills instruction, since computers have the advantage of providing economies of scale and permit self-paced instruction, few adults are taught through computer-assisted methods. Some of the factors that account for the limited use of computers are the lack of access to hardware, the quality of the available software, and basic skills instructors' resistance to learn the technology.

Several topics should be considered for further study and development in the area of instruction. They include:

- An examination of the conditions under which a variety of instructional techniques can be used effectively with different learners;
- The development of classroom management strategies that can be used successfully in various learning environments;
- An evaluation of the potential that all forms of computer-assisted instruction, especially interactive systems, has for basic skills education; and
- Development of models for implementing computer-based instructional systems.

DEVELOPMENT OF ASSESSMENT AND ACCOUNTABILITY SYSTEMS

One of the most pressing issues in the field of adult basic skills education is the need to develop a comprehensive national database.

Policymakers and practitioners alike currently rely on estimates of data to guide program design and operations. These data concern the extent of the adult population who could benefit from literacy and basic skills services, the impact of these services, and the types of services that are most effective.

While the process for calculating the extent of the current and potential target population of basic skills programs participants will continue to be problematic, actions can be taken to improve the information that is known about the impact and quality of services. Three possible actions are discussed below.

Creation of Performance Standards. A critical step in the design of any service delivery system is the creation of standards against which the performance of participants can be judged. Historically, no single set of standards has existed for the adult basic skills education system. Rather, individual states and local programs have specified the desired outcomes for adult basic education program participants--such as the life skill competencies identified in the APL and subsequent studies undertaken in the 1970s, or grade-level gains traditionally associated with elementary education. In other instances, programs have allowed learners to set their own goals and have used the reported accomplishment of these goals as evidence of program success.

Some standards have been specified for programs such as those funded under the Job Training Partnership Act, which considers a program's success in placing participants in jobs. New state efforts at specifying skill requirements are exemplified by the work undertaken by Michigan's

Employability Skills Task Force. The overall result of these efforts is that where standards exist, different sets of criteria are being used to assess learner performance. The difference in standards can be counterproductive for learners who wish to move from one program to another, and makes the collection of national data on program effectiveness nearly impossible.

With the press for program accountability and for the need to provide a basic skills system that can better upgrade and retool the American workforce, the creation of performance standards for the system becomes imperative. These standards should include the generic basic skills that are required across different occupational categories. Thus, steps should be taken to:

- Create performance standards for basic skills programs that are relevant to the goals of the program, are measurable, and are interpretable.

Development of Learner Assessment Procedures. An essential component of the implementation of program standards is the measurement of learner performance. In many literacy and basic skills programs across the country, no formal instruments are used to measure learners' acquisition of skills. Programs that do undertake some form of assessment usually rely on instruments such as the TABE or ABLE, which many program instructors feel do not adequately measure participants' learning. Even when instruments are used, there are problems with administration and interpretation. For example, program instructors sometimes do not follow the time requirements of tests, or there is no attempt to control for or adjust gain scores for regression and warm up.

There is also question about the usefulness of the outcomes that are specified by these instruments. Sticht's review of 32 different studies involving the U.S. Army, Navy, and Air Force programs, the national reading academies, the Job Corps literacy programs, and computer-assisted or computer-managed literacy programs show grade level gains of from six months to three years, with hours of instruction ranging from 2 to 141. The average gain was 1.5 years in 48 hours of instruction. 55/ It is not clear what these gains represent in terms of learners' skills or overall effects of programs.

The implementation of competency-based assessment systems, in which the attainment of specific life skills is measured, represents an alternative to traditional grade-level tests. Also promising is the use of applied performance measures in competency-based high school diploma programs, where a spectrum of adults' skills are assessed by multiple measures. 56/ Finally, the Educational Testing Service's project to identify and measure the core basic and higher order thinking skills needed by adults should provide new directions for basic skills assessment.

While the efforts underway to provide alternative forms of assessment for basic skills programs appear promising, more work is needed if we are to have a system is which the majority of programs assess routinely. Illustrative activities that should be taken to meet this goal are:

- Design of reliable and valid measures for assessing learners' acquisition of basic and higher order thinking skills;

- Development of model projects that demonstrate the use of new technologies for assessment; and

- Creation of mechanisms for training instructors and tutors in the proper administration and interpretation of assessment instruments.

Program Evaluation. Basic skills program staff not only infrequently assess learner outcomes, they also rarely evaluate the impact of their services. Several factors account for this, including the lack of staff who are trained in evaluation methodology, and the unavailability of monies for third-party evaluations.

With the increased emphasis on accountability from the federal level in the Adult Education Amendments of 1988, as well as with the requirements in the welfare reform and job training legislation, more systematic efforts in program evaluation will need to be undertaken. The conduct of formative, as well as summative evaluations, can provide valuable information that can be used not only to improve programs but also can provide data about the transferability of these programs.

Activities that might be initiated to enhance the state of program evaluation and to encourage the conduct of evaluations are:

- The development of evaluation models that can be used by classroom-based and volunteer literacy and basic skills programs--especially those that utilize technology; and

- The creation of mechanisms for training staff to implement data collection procedures that can be used in formative evaluations.

RESEARCH ON THE ORGANIZATION AND DELIVERY OF SERVICES

Our pluralistic system for delivering adult literacy and basic skills services involves a variety of organizations that are attempting to meet the needs of a diverse group of adult learners. As the population of adults who could benefit from these services expands, new efforts are required to attract adults to enroll in programs, and to encourage their continued participation. It also is critical to maintain our pluralistic delivery system by exploring new organizational and structural arrangements that can be developed to serve adult learners. Issues that must be considered in order to improve the delivery of literacy and basic skills services are discussed below.

Retention of Program Participants. Available statistics concerning the retention rates of participants in basic skills programs are not encouraging. Estimates indicate that almost half of the adults who enroll in basic skills classes leave within a short period without improving their skills significantly. While the reasons why adults leave programs are varied, better information is needed about strategies that can be used to encourage learners to meet both their short-term goals and to pursue further study or training.

Also questionable is whether we are serving the variety of adults who could benefit from participation in a basic skills program. With the increased emphasis on improving the quality of our workforce, new efforts are needed to attract learners who ordinarily would not participate in an education program to upgrade their skills.

Illustrative actions that can be taken to address these issues are:

- Development of improved systems for documenting and increasing learners' retention rates; and
- Creation of new strategies for attracting potential basic skills program participants.

Alternative Delivery Systems. One strategy for attracting and retaining basic skills program participants is to offer services in varied organizational settings and under different types of arrangements. The increased participation of business, industry, and labor in basic skills education is an example of new efforts in private-public partnerships. In these workplace literacy programs, employees are offered a variety of incentives--including release time and the potential for promotion--to participate in education classes.

Also promising are the efforts underway to break the cycle of illiteracy through the operation of intergenerational literacy programs, in which both parents and children participate in the educational process. Finally, the role of volunteers continues to expand as new arrangements are explored to enhance basic skills programs using both paid and volunteer staff.

To have an enhanced basic skills system, efforts are needed to assess the utility of the models that are being developed and to create new alternatives for serving program participants. Illustrative activities that should be considered are:

- The documentation of the elements that are critical to the success of various partnership and service delivery models; and
- Creation of a mechanism for disseminating information about the implementation of these models.

A PROPOSED FEDERAL ROLE

The creation of a comprehensive research and development base for supporting a coordinated adult basic skills education system will require the establishment of a new institutional structure and an additional federal investment. Currently, the minimal basic skills research efforts that are undertaken are splintered across a few federal agencies. No centralized planning exists, nor is there a mechanism for aggregating the results of the research. Furthermore, the potential for duplication of effort is great, and the impact of the research that is conducted is not maximized.

In addition to the need for a new structure, the amount of the federal investment must be increased. The current investment is not sufficient to support the essential research and development activities that should be conducted. Without these activities, the creation of a coordinated basic skills system will be next to impossible.

The federal government's role in improving the state of knowledge of literacy and basic skills education is critical to the success of the enterprise. With the support of a centralized authority, an organized research and development agenda can be developed and carried out. Specifically, the federal government should create a national center for adult literacy, which would perform the functions necessary to create a body of knowledge that can be used to enhance basic skills programs. These functions are described below.

Creation of a National Center for Adult Literacy. The federal government should charter a national center for adult literacy, as

depicted in Figure 1, which should have the following three functions:

1. Research: A center would conduct and commission work in adult literacy and basic skills, including the development of processes and tools for assessing the utility and impact of program models, and would issue an annual report on the status of adult basic skills research;

2. Policy Analysis: A center would maintain a national database on the state of basic skills education; issue reports on the condition of basic skills education; and advise the federal, state and local governments on literacy and basic skills issues; and

3. Technical Assistance and Training: A center would monitor the development of literacy and basic skills training programs; disseminate information on exemplary curriculum and training models; evaluate the implementation of technology and computer-based systems, and provide technical assistance to federal, state, and local agencies.

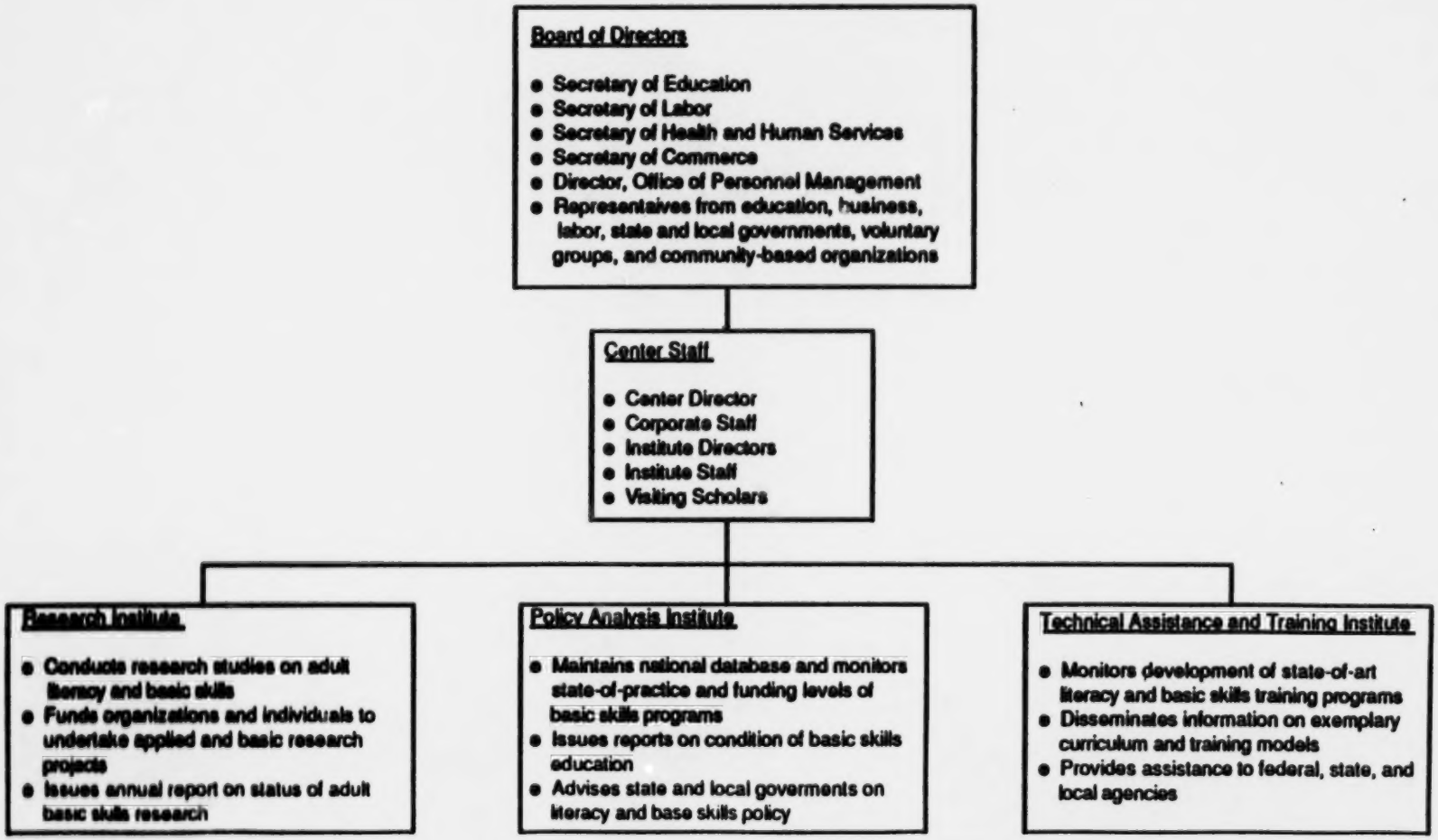
Three institutes should be created to carry out these functions. The Research Institute should perform applied and basic research on the topics discussed in this paper, issue reports on the findings from research, and identify issues for further investigation. The Policy Analysis Institute should be responsible for maintaining a national database on the types and qualities of services that are being delivered in literacy and basic skills education. This institute also should issue status reports on information in the database and should provide assistance to all levels of government.

The Technical Assistance and Training Institute should identify standards for effective literacy and basic skills programs, create a mechanism for evaluating programs, and fund the dissemination of exemplary

Figure 1

A NATIONAL CENTER FOR ADULT LITERACY

Proposed Organization and Function Chart


Board of Directors
• Secretary of Education
• Secretary of Labor
• Secretary of Health and Human Services
• Secretary of Commerce
• Director, Office of Personnel Management
• Representaives from education, business, labor, state and local governments, voluntary groups, and community-based organizations
Center Staff
• Center Director
• Corporate Staff
• Institute Directors
• Institute Staff
• Visiting Scholars
Research Institute
• Conducts research studies on adult literacy and basic skills
• Funds organizations and individuals to undertake applied and basic research projects
• Issues annual report on status of adult basic skills research
Policy Analysis Institute
• Maintains national database and monitors state-of-practice and funding levels of basic skills programs
• Issues reports on condition of basic skills education
• Advises state and local goverments on literacy and base skills policy
Technical Assistance and Training Institute
• Monitors development of state-of-art literacy and basic skills training programs
• Disseminates information on exemplary curriculum and training models
• Provides assistance to federal, state, and local agencies

programs. Staff in this institute would provide assistance to state and regional staff development centers concerning state-of-the-art training programs.

The center should have a staff of researchers in the fields of adult learning and basic skills; policy analysts; and technical assistance professionals. In addition to resident staff, the center should have a visiting scholars program that would permit experts from universities and service delivery agencies to work at the center for designated periods of time. The visiting scholars' program would provide an opportunity for individuals with specialized areas of expertise to work on projects.

The center's research and development agenda should be created based on the advice of a range of individuals involved in basic skills policymaking, practice, and research. The agenda should reflect the needs of professionals who are providing basic skills services, as well as those who are engaged in research and model development.

The center should conduct research and assistance activities based on its own agenda, as well as support the basic skills efforts that are being undertaken by universities and research organizations across the country. The center also should fund researchers and practitioners from other organizations to conduct projects related to the creation of a basic skills system.

The center should be a not-for-profit, quasi-governmental corporation under the supervision of a board consisting of the Secretaries of Education, Labor, Health and Human Services, Commerce, and the Director of the Office of Personnel Management, as well as representatives from

education, business, labor, state and local governments, community-based organizations, and voluntary groups. The creation of a quasi-governmental structure is critical, rather than the establishment of a center in an existing federal agency, so that the center can cut across organizational boundaries and constituent groups. The center could be modeled on a quasi-governmental organization such as the Corporation for Public Broadcasting. The chairperson of the center's board, as well as the members who are not federal officials, should be appointed by the President. The center should receive an initial appropriation of $30 million per year, which would provide $10 million for each of the three functions. In addition to receiving federal monies, the center's staff should work with business, industry, and foundations to seek support for joint sponsorship of research, development, and assistance activities.

Other Federal Activities. In order to encourage the support of basic skills research and development by federal agencies, the Departments of Education, Labor, and Health and Human Services should be authorized to spend up to $7 million from their existing research budgets for research and policy analysis. The Departments could use these funds to contract with the national center or to support appropriate activities.

The Department of Education also should encourage states to coordinate the funding of innovative projects supported under Section 353 of the Adult Education Amendments of 1988. A series of coordinated state efforts that address national priorities in adult basic skills research and development could result in an enriched knowledge base.

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